



PROCEEDINGS
OF THE
LINNEAN SOCIETY
OF
NEW SOUTH WALES.

WEDNESDAY, MARCH 30TH, 1904.

The Twenty-Ninth Annual General Meeting of the Society was held in the Linnean Hall, 23 Ithaca Road, Elizabeth Bay, on Wednesday evening, March 30th, 1904.

Dr. T. Storie Dixson, President, in the Chair.

The Minutes of the preceding Annual General Meeting (March 25th, 1903) were read and confirmed.

The President delivered the Annual Address.

PRESIDENTIAL ADDRESS.

By way of prelude to a brief review of the past year's history, I may remind you that the Members are regularly kept in touch with the Society's work by means of the monthly Abstracts of the proceedings of the Meetings, and by the issue of the Parts of the Proceedings with as little delay as possible. Hence at the Annual Meeting it becomes unnecessary to attempt to report in detail upon many matters which, under other circumstances, it would be desirable to recapitulate at some length.

No better evidence of the Society's activity is needed than is furnished by the four Parts of the Proceedings published and distributed during the year—Part 4 for 1902, and Parts 1-3 for 1903. These Parts represent a volume of 948 pages, illustrated with 52 plates. But the Proceedings for 1903, comprising thirty-three papers, will, on completion, represent a volume of slightly over 1000 pages, with 50 plates, some of them folding maps, which in respect of cost mean more than an equivalent number of these. An annual volume of such dimensions is not only above the average size, but, except under very favourable conditions of income, it makes an undesirable approach to or even exceeds the extreme limit of our financial resources in this direction; and accordingly the Hon. Treasurer will presently have occasion to tell you that, for the first time for some years, our expenditure has exceeded our income, the financial year ending with a debit balance of £23.

The drainage arrangements of the Society's premises are about to be remodelled, consequent upon the availability of the new low-level sewerage system recently completed in this neighbourhood. This will necessitate an expenditure of an unusual and special character. In addition, circumstances which cannot be controlled, will shortly require a change in the mode of transmission of an important section of our exchanges to Societies and Institutions abroad; and this will entail an additional annual expense which must be allowed for. For these reasons, therefore, during the current year it will be necessary to exercise an extra check upon our publishing enterprise. It is desirable that attention should be drawn to these matters because we are beginning the year with a number of papers (including some held over from last year) sufficient to keep the Society busy for about one-half the Session, or say until the August meeting—a state of things without precedent. This announcement may cause the Hon. Treasurer some little anxiety; and if so, it will be necessary to make provision for its alleviation: but on every other ground this evidence of unwonted scientific activity is extremely gratifying. It is true that we commence

the year slightly but not ruinously in debt; but as a set-off we have had the gratification of welcoming to our ranks three new contributors whose papers are especially worthy of a place in the Society's Proceedings.

During the year seven Ordinary Members were elected, and two Members resigned. The Membership had not, therefore, very materially altered.

Since the last Annual Meeting the Council has had under consideration the question of continuing the suspension of entrance fees. During the period of five years (1899-1903) in which the entrance fees were given up, 81 Members were elected, of whom about 41 are effective at the present time. After considering the matter carefully, the Council has decided to recommend that the suspension of the payment of entrance fees should not be continued, but that the amount of the entrance fee should be reduced from £2 2s. to £1 1s. for Ordinary Members and given up altogether in the case of Associate Members. An opportunity for considering this recommendation will be afforded to Members at an early date.

The additions to the library for the year amounted to 1087, received by gift or exchange from 179 Societies and eleven individuals.

The Macleay Bacteriologist has during the past year continued his researches into the bacterial origin of the vegetable gums. In September, 1902, he showed that arabin, the soluble wattle-gum, was formed in the tissues of certain Leguminosæ by a micro-organism, *Bacterium acacie*, and that metarabin, the insoluble wattle-gum, was the product of another, *Bact. metarabinum*. Following up this discovery, he has during the past year read to the Society papers which deal with the other byproducts of these bacteria, with the causes of gum-formation in plants of other natural orders, and with kindred subjects. One or both of these microbes have been isolated from the vine, the cedar, the almond, the peach and the plum, all of which were affected with gum-flux. Having found the source of arabin and metarabin, Dr. Greig Smith studied the pararabin gum of *Sterculia*, and after isolating

a bacterium, showed that it produced pararabin. Thus the origin of the chief members of the arabin group of gums has been traced to certain organisms which convert the sap of the host plant into gum.

Although the chief agents in gum-formation are these three bacteria, yet others may be present in the plant tissues, and contribute a portion of the exudate. This was found to be the case with *Bact. persicæ*, which produces a gum allied to the members of the arabin group.

Occasionally a yeast-like mould, *Dematium pullulans*, is found in the tissues of gummed fruits, and as it has been credited with being the cause of certain cases of gum-flux, its investigation was undertaken. It was, however, found to produce a pararabin gum, and could not, therefore, be responsible for the arabin and metarabin gums of the fruit. It had been previously shown that an organism, *Bact. sacchari*, which normally inhabits the tissues of the sugar-cane, was capable of producing a slime. This was investigated, and found to consist essentially of a galactan gum.

This work, which had been done by the Society's Bacteriologist, has thus greatly advanced our knowledge concerning the formation of the chief vegetable gums; and not only has it been of scientific value, but it has also been of considerable economic importance. The world's supply of gum acacia can now be increased, as well as improved, by the infection of suitable trees with a selected bacterium.

During the year two students received full courses of laboratory instruction.

In August last we were called upon to mourn the death of Lady Macleay, after a brief illness. This sad event closed a most interesting chapter of colonial family-history. Her grandfather, Sir Richard Bourke, K.C.B., was one of the most enlightened and popular of Australian Governors. Her father, the late Sir Edward Deas Thomson, C.B., K.C.M.G., is still remembered by some of us as the courtly Chancellor of the University of Sydney. Sir Edward came out to New South Wales in 1828, about three years later than Mr. Alexander Macleay, whom he succeeded, as Colonial

Secretary and Registrar of the Records, in the year 1837. In the year 1857, Miss Emmeline Susan Deas Thomson, Sir Edward's second daughter, was married to Mr. William Macleay, who with his cousin, Mr. W. S. Macleay, arrived in Sydney in 1839.

Lady Macleay is sincerely mourned by a large circle of relatives and intimate friends; and by many whose sorrows and needs were lightened by her sympathy and help. Since her death, the old home, which for so long a period was almost uninterruptedly in the occupation of one or another member of the Macleay family, has been given up. Many memories of interest to scientific men cling about Elizabeth Bay House. It is difficult to ascertain with certainty the names of distinguished visitors or of others who were there welcomed as guests, but the list would certainly, or very probably, include Dr. George Bennett (before he became a resident), John Gould, Captain Fitzroy and Charles Darwin, Thomas Henry Huxley, Joseph Hooker, Robert Lowe (afterwards Viscount Sherbrooke), the officers or naturalists of various British and foreign Expeditions, Wyville Thomson, Henry N. Moseley and their colleagues, of the 'Challenger' Expedition.

SOME NEW LIGHT ON THE SOCIETY'S EARLIEST HISTORY.

On the present occasion, and in a special manner, the turn of events once more directs the attention of the Society to a subject of two-fold interest—Sir William Macleay in relation to this Society, and also in his relation to the greater matter of Science, and its promotion.

In the fulfilment of his desire to advance science, Sir William Macleay made this Society, in its day, the chief medium through which he elected to work and act during his life-time; and upon it, accordingly, have now devolved in their entirety the responsible duties of acting as his chief trustee in scientific matters. And yet, notwithstanding his close connection with the foundation and early management of the Society, hitherto it has not been possible to find documentary evidence as to what actually transpired before the Society became fully fledged and held its first meeting for the reading of papers and for other scientific business, on January

25th, 1875, as reported on pp. 1-13 of the first volume of the Proceedings. For this deficiency there are at least two reasons. In the first place, of the four gentlemen who were most intimately connected with the formation of the Society, Sir William Macleay was the last survivor. And in the second place, the absolute destruction of the Society's early official records in the disastrous Garden Palace fire, in the year 1882, once and forever closed up this source of information. Under these circumstances you will be pleased to hear that Sir William Macleay's own notes on the Society's earliest history have quite recently come to light, and that, very appropriately, I am able to present them to your notice on the present occasion. It is also possible to indicate more clearly than heretofore some of the circumstances which almost certainly helped to lead him to identify himself so readily and so closely with the projected new Society just when he did.

The records of the Entomological Society of New South Wales seem to have shared the lamentable fate of the Linnean Society's early records. No trace of them was ever found among Sir William's papers and books after his death; and it seems reasonable to suppose that they were handed over to this Society and kept with its own records.

The last paper in the second and last volume of the Transactions of the Entomological Society of New South Wales is marked "Read 7th July, 1873," from which it would appear that no meetings were held after this date, and that the Society thereupon came to an end.

In December of the same year (1873), Sir William Macleay took the important step of notifying to the Senate of the University of Sydney that he was prepared to bequeath his library and collections to the University, and to endow the Curatorship; and at the same time he forwarded a copy of the terms of his bequest. The Senate accepted the offer, and at the University Commemoration on the 28th March, 1874, the Chancellor, Sir Edward Deas Thomson, C.B., made reference to the matter in the course of his address (as reported in the daily papers of March 30th.)

Mr. Barff's "Short Historical Account of the University of Sydney"* affords some most interesting information about the Macleay Collections, derived from the University records, and previously unpublished. Two items are worthy of notice. First, Sir William's estimate that the joint Alexander and William Sharp Macleay Collection comprised the contents of about 480 drawers, and his own collection, 320 drawers, or a total of 800 drawers. Also, that his own collection had been accumulated during the preceding fifteen years; so that he must have begun to take an active interest in entomology about the year 1858 or 1859.

The year 1874 must have been one of the most important in the history of the Macleay Collections, for it was characterised by an expansion and development thereof to an extent which Sir William did not contemplate when he made his offer to the Senate. Without going into details, perhaps the most important factor in this progress may be mentioned — Sir William's decision to appoint a Curator, and the engagement of Mr. George Masters in that capacity.

On February 5th, 1875, Sir William made the following note : — "This day completes the first year of Mr. Masters's Curatorship, and I think the additions to my museum during that time have been very large indeed. I have now over 1,000 species of birds, and of these 395 are Australian. There is a fine collection of fishes, and the reptiles are rapidly increasing. A large number have been added from the Endeavour River, California, and elsewhere, to the entomological collection; while of shells, and marine animals, we have accumulated a vast number."

But if Sir William had penned his note on some day towards the end of September or in the early part of October of the previous year, he would still have been in a position to speak of his very extensive and comprehensive acquisitions of material, including the results of a systematic and successful attempt to obtain a representative collection of the marine fauna of Port

* In connection with the Jubilee Celebrations, 1852-1902, 8vo., Sydney, 1902, p. 119.

Jackson. Moreover, attention was directed to other matters besides the collection and acquisition of specimens, for Sir William and Mr. Masters, with the occasional help of Professor Stephens and Mr. Brazier, devoted much time to the sorting and preservation of the marine and other forms. They also made a brave beginning in the work of attempting to identify the representatives of the species already known to science, but of which named specimens were wanting in the Collection. Thirty years ago such a task as this would be a very discouraging one to a colonial zoologist. Sooner or later, Sir William must have realised that he had upon his hands enough material, much of it undescribed, to occupy the attention of several specialists for some time; and that if it were to be turned to account, sooner or later something would have to be done.

At some such juncture as this, when Sir William was as busy with the matter of museum development as he could well be, the formation of a new Scientific Society was mooted. The following is Sir William's account of how this came about, and to what it led, until the doings of the Society began to be chronicled in the Society's Proceedings. Of course it was never intended for publication, and it appears here as a continuous narrative because of the omission of irrelevant matter.—

Oct. 13th, 1874.—Dr. Alleyne and Captain Stackhouse are trying to get up a Society of Natural History. I hope they may succeed. Such a Society, embracing all branches of Natural History, and issuing a Monthly Magazine, ought to be both useful and successful.

Oct. 24.—Stackhouse has a number of signatures to the Natural History Society proposition, and has called them [the signatories] together to consult, on Thursday next, at 4.30, at the Free Public Library.

Oct. 29.—At 4 o'clock my cab came for me, but I did not go to town as it threatened rain, and my cold is still troublesome. I sent an excuse to Stackhouse, this being the day of the preliminary meeting of his proposed Society.

Oct. 30.—Stackhouse called this morning about preparing rules for the new Society. At the meeting yesterday the name was fixed as "The Linnean Society of New South Wales"; and I was elected President. . . . Stephens, Alleyne, Stackhouse, and I were for an hour at the Club this afternoon drawing up rules for the Society.

Oct. 31st.—I had to go into town before 12, as at that hour I had to meet Stackhouse, Stephens and Alleyne about the rules of the Society. We agreed upon the rules to be laid before the meeting on Thursday next; also upon the form of a circular inviting members.

Nov. 5th.—I was detained so long . . . that I was unable to attend the meeting of the Linn. Soc. of N.S. Wales, but I believe the rules were gone through, and passed.

Nov. 16th.—I sent off to-day, at Stackhouse's request, a number of circulars of the Linnean Society of N.S. Wales addressed to people in Yass, Gundagai, and Wagga Wagga. There is considerable difficulty in getting suitable premises for the Society.

Nov. 21st.—I went to a picnic to-day of the Linnean Society; about 20 members were present. We started from the Circular Quay at 10 o'clock, in a small and dirty steamer; and after picking up a fishing boat, &c., we fished Vacluse Bay, the top of North Harbour and Quarantine Bay, where we had our dinner. The catch of fish was small; at Quarantine Bay we got a good many white Trevally, pronounced by those who ate some, a good fish, and a few salmon and flathead. I got for my collection a swimming crab, a salmon and a small barred sole. Masters, who was of the party, got also, I believe, some small shells. At Quarantine Bay we saw a large sunfish rolling about for some time. We got back by 6 o'clock.

Dec. 4th.—The room in George-street [Lloyd's Chambers, 362 George-street] taken for the Linnean Society, is now ready for use.

Dec. 15th.—Stackhouse came out this forenoon to see my bottles, vases and tanks; he wishes to get a supply for the Linnean Society's room. . . . When in town I went with Stackhouse to Elliott Brothers on Linn. Soc. business, and attended a meeting of the Managing Committee of the Society at the room in George-street.

Dec. 18.—Went to town at 4 o'clock, taking with me, at Stackhouse's particular request, my harpoon, which he wishes to take with him on a Linnean Society fishing picnic to-morrow.

Dec. 19th.—A pleasant day, though rather hot. Masters came here in the morning, and at 9.30 a.m. he and I drove to the Circular Quay to join the Linnean Society's picnic, which was to start thence at 10 o'clock. At 10.30 a.m. we got away; the steamer, a very small and dirty one, and the party, numbering 16—Ramsay, Brazier, Badham, Dalley, &c., &c. We hauled the seine in Chowder Bay, Obelisk Bay, and above Shell Cove in Middle Harbour, where we had dinner. We did not get much either by the net or dredge (we had Mulhall's dredge with us), but plenty of fish to eat of good quality, which was skilfully cooked by Dalley. We got back to the Circular Quay about 6.30 p.m., a good deal tired and very much sunburned.

Jan. 13th, 1875.—At 4 p.m. Masters went with me to the Annual General Meeting of the Linnean Society of New South Wales. The meeting was well attended. The Officers and Council for the year were appointed, and the last Monday of each month fixed for the Ordinary Meetings. I was re-elected to the Presidency.

Jan. 22nd.—Purchased yesterday for presentation to the Linnean Society a very nice microscope. Our first meeting is on Monday; as I have not prepared any address, I wish to give something as a substitute.

Jan. 25th.—Went to town at 8 o'clock to attend the Linn. Soc. Meeting. The attendance was good (16). Brazier described some shells, Ramsay a new bird, and I read some notes on the Entozoa of the Sunfish, and exhibited the animals. I also presented a microscope.*

This interesting account leaves little to be desired, except that it does not disclose the identity of the member who was responsible for the choice of the Society's name; though apparently it was not Sir William. The Society possesses a copy of the Rules adopted at the Meeting held on 5th November, 1874, but lacks a copy of the circular referred to above in the entry for 31st October. Perhaps some of the older Members may be in a position to afford some additional information, or, it may be, to find a copy of the circular; and if so, the Secretary will be grateful for their co-operation.

The first edition of the Rules, bearing date 1874, includes the names of the first Officers and Council, and the names and addresses of the Original Members, numbering 107. The first Officers were:—*President*, Wm. Macleay, F.L.S.: *Vice-President*, The Hon. Sir Wm. Macarthur, M.L.C.: *Council*, H. G. Alleyne, M.D., J. C. Cox, M.D., F.L.S., H. H. Kater, Captain A. A. W. Onslow, R.N., E. P. Ramsay, C.M.Z.S., W. J. Stephens, M.A.: *Secretary*, Commander T. Stackhouse, R.N.: *Treasurer*, H. H. Burton Bradley.

Of the Original Members, only eight survive or have maintained their connection with the Society.

* Proc. Linn. Soc. N.S. Wales, i. p. 13. This instrument, together with the larger one by Ross, subsequently presented to the Society by Sir William, perished in the Garden Palace fire.

SIR WILLIAM MACLEAY AND THE ENDOWMENT OF RESEARCH.

With a reticence which was characteristic, Sir William Macleay himself never publicly referred to his benefactions, nor did he commit himself to any declaration upon the subject, beyond what he deemed to be necessary to give legal effect to his arrangements.

Sir William's intention to make due provision for the endowment of Research Fellowships, first became publicly known through an announcement by the Chancellor of the Sydney University, in the course of his Commemoration Address delivered on May 2nd, 1885. The announcement had its inspiration mainly in Sir William's appreciation of the memorable character of the occasion; though doubtless it was also a diplomatic move to enable the Chancellor, under the most favourable conditions, to participate in the duty of keeping "prominently before the public the advantages to be derived from scientific education and training." At the Commemoration of May 2nd, 1885, for the first time, the University exercised extended powers conferred by the 'University Extension Act of 1884,' and granted degrees other than those provided for in the original Charter of 1858. The first two science students who had completed the prescribed course were on this occasion admitted to the degree of B.Sc.

As the management of matters in connection with the Fellowships is about to become an integral part of the administrative work of this Society, it will be of interest to ascertain, if possible, when and under what circumstances Sir William decided to establish them.

Up to the year 1880, the amount of the endowment received by the University from the State was £5,000 per annum. But this sum was scarcely more than sufficient to provide for four Chairs (Classics, Mathematics, Chemistry and Physics, and Geology and Mineralogy), in addition to what was requisite for administrative and incidental expenses. In the year 1881 this grant was increased by an additional amount of £1,000 per annum; and in the following year the total was again augmented by the sum of £5,000 per annum. "It is from this time," says

Mr. Barff (*l.c.*, p. 94), "that the expansion of the University began. The announcement in that year [1880] of the great Challis bequest, to accrue at a future time, stirred the University to fresh life, and an extended scheme of teaching, involving the establishment of chairs or lectureships in Natural History, Modern Languages, Engineering, and the opening of a Medical School, was adopted by the Senate, and approved by the Government of the day [in 1881]. . . . The Arts Curriculum was made much wider in its range . . . while a separate Faculty of Science was established, with a curriculum of pure Science, leading to the Degree of Bachelor of Science, and with a sub-department of Engineering" [in 1882].

Sir William Macleay, as a Member of the Senate, took the keenest interest in the developments outlined above, and especially in all that related to the Faculty of Science. But he was quite as much interested in them as a private individual devoted to science, and the moving spirit of a Scientific Society which existed solely for the cultivation and study of the Science of Natural History in all its branches. In the former capacity, he had already made some progress in arranging a comprehensive scheme for the present or future utilisation of the greater portion of his private fortune, for the advancement of science; though still leaving himself scope for new developments.

As one direct result of University expansion, opportunities for scientific study and facilities for scientific training had now become available in wholly new directions, or to an extent previously unknown in New South Wales. On the other hand, the extent to which science students might be disposed to respond to these opportunities, under existing conditions, was theoretically subject to some hampering limitations. The tantalising dilemma in which a scientific aspirant may find himself is lucidly indicated in one of Huxley's Addresses.* If Science is to take its proper place in a University, it must be accorded due "recognition as a Faculty, or branch of study demanding recognition and special

* "Universities : Actual and Ideal." 'Science and Culture,' pp. 47 and 55.

organization, on account of its bearing on the wants of mankind." But when the University has done its duty by Science, and the Faculty of Science, in its turn, is prepared to do its duty by the Science Student, the latter, before committing himself to the Faculty, may do well to ponder such words as these:—"If a student of my own subject shows power and originality, I dare not advise him to adopt a scientific career; for, supposing he is able to maintain himself until he has attained distinction, I cannot give him the assurance that any amount of proficiency in the Biological Sciences will be convertible into, even the most modest, bread and cheese."

One circumstance in particular—the date of the Will in which he incorporated his scheme for Fellowships—seems to show clearly that, concomitantly with the inauguration of the Faculty of Science, Sir William's attention was arrested by this question of the science student's disabilities; and that out of its consideration arose the idea of establishing Fellowships, and a little later, that of offering Exhibitions* for country students; and also his recognition of a duty, to which he directed the attention of this Society, in an address delivered on the occasion of his dedication of the Linnean Hall to the Society, in October, 1885, in the following words:—"The importance of the subjects [Natural History in all its branches] coming within the scope of this Society can scarcely be over-estimated; and one of our chief duties, it seems to me, is to keep prominently before the public the advantages to be derived from scientific education and training." (The continuation of his remarks on this point, and their bearing on the question of the improvement of the status of the science student, will be found in the extract given below, p. 17.)

Sir William's determination to establish Fellowships, once arrived at, must have taken definite shape rather rapidly. The

* For particulars, see Proceedings of this Society. Vol. viii. p. 548. One Exhibition was awarded; the offer of others was eventually withdrawn, and the candidates for them were not up to Matriculation standard.

Senate first learned that Parliament had voted an increased endowment of £5,000 for the year 1882, early in the month of December, 1881; and such prompt action was taken that a "Scheme of University Teaching in accordance with the increased endowment lately voted by Parliament," was drawn up by a special committee, adopted by the Senate, and forwarded for the approval of the Government before the end of the same month. About three months after this date Sir William Macleay had already matured his scheme, and executed a new Will, with a view to giving legal effect to it. In a letter to the Chancellor, of date March 29th, 1885, after enumerating the qualifications for a Fellowship, he added—"These are, as far as I recollect, the chief conditions made in my Will three years ago."

In his Commemoration Address of April 23rd, 1892, the Chancellor of the University, Sir William Manning, once more referred to the Fellowships in the following words:—"Four Fellowships, of so great an amount, exclusively for our graduates in Science can hardly fail, when available, to cause a great expansion in a School which has hitherto languished for lack of prospective advantages, except in its contributions to the School of Medicine. The want of candidates for graduation in pure science was well known to Sir Wm. Macleay; and he must, therefore, have distinctly contemplated that his endowment would, after the more or less remote date at which it would come into operation, give new life to the School, and multiply graduates who would fill his Fellowships."

No exception can be taken to this statement of the case, except that it leaves out of sight the important point that Sir William's scheme for Fellowships was based entirely upon foresight, and not upon experience, as the Chancellor's remarks might, perhaps, be taken to imply.

The Chancellor's announcement is now only of historical interest. Sir William Macleay's plan, as therein outlined, provided for an endowment fund of £30,000, but otherwise did not differ materially from the later one. It was subsequently set

aside in favour of the scheme embodied in Sir William's last will, executed in December, 1890, and to this effect :—

Subject to a life interest on the part of his wife, the Testator directs his executors and trustees—

“ Upon trust to pay the sum of thirty-five thousand pounds in cash or invested funds to that value to the Linnean Society of New South Wales which Society shall invest and keep invested and reinvested from time to time the said sum in the manner hereinbefore mentioned and shall hold the income thereof upon trust for the foundation and endowment of four Fellowships to be called the Linnean Macleay Fellowships which shall be maintained for the following purposes and upon the following conditions

The Fellowships are intended to encourage and advance research in Natural Science by enabling those who wish to continue their studies at the University or elsewhere after having completed the regular curriculum and taken a Science degree to do so

The qualifications necessary for a Fellowship are

The Candidate must be a member of the Linnean Society of New South Wales and reside in New South Wales must declare his intention of employing himself during the period of his Fellowship in original investigations in Natural Science and must have taken a Science degree in the University of Sydney

The appointments to the four Fellowships shall be made annually by the Council of the Linnean Society of New South Wales at such times in such manner and under such regulations as it shall determine but it shall not be necessary to fill up all or any of the vacancies if eligible candidates do not present themselves The same Fellows may be and it is my intention and wish that they should be re-elected from year to year so long as the Council of the Linnean Society of New South Wales is satisfied with the quantity and quality of their work

The results of their work and investigations of the Fellows shall be published regularly with the Proceedings of the said Linnean Society

The salary of each Fellow shall be four hundred pounds a year the interest accruing from vacant Fellowships shall be added to the principal

The interest on the endowment over and above four hundred pounds a year for each Fellow shall be taken for the general use of the said Society at the discretion of the Council thereof

No Fellow shall be permitted to occupy any salaried position or undertake any employment for payment during his Fellowship nor shall he without the special sanction of the Council take fees for teaching any pupil either publicly or privately If in the opinion of the said Council of the said Society or a three-fourths majority thereof any Fellow shall have transgressed the last preceding rule they may by the vote of such majority remove him from Office

Every Fellow before entering on Office shall engage in writing to accept his office on the terms of this will and that the decision of the said Council on any dispute arising between him and them on the subject of his Fellowship his employment thereunder and his tenure of office shall be final and conclusive without appeal

The subjects of investigation undertaken or assigned to Fellows shall be all branches of Natural History Biological and Geological."

It will be noticed that, whatever other desirable qualifications a candidate for a Fellowship may possess, it is indispensable that he shall have taken a degree in Science. From Sir William's point of view this condition was both reasonable and logical. It was the outcome of his strong convictions upon the advantages to be derived from a scientific education and training, and the need of a more appreciative recognition thereof; coupled with a realisation of the fact that, at present, the study of Natural History leads to little or nothing in the shape of profitable occupation. But Sir William clearly outlined his standpoint in the address delivered on the occasion of the dedication of the Linnean Hall. This was published in the newspapers of the day, and subsequently as a pamphlet,* but as it is easily overlooked, atten-

* Linnean Society of New South Wales. Record of Proceedings. Linnean Hall, Ithaca Road, October 31st, 1885. 8vo. Sydney, 1885.

tion may well be called to it again. On the occasion referred to, Sir William said :—

“It is only of late years that Natural Science has found its proper place in University education in England and among English-speaking people, who are, in this respect, far behind France and Germany. It is now, however, making rapid strides, and the ancient University of Cambridge bids fair to become as famed as a science school as ever it was for mathematical excellence. Other Universities are now emulating its example, and I trust that Australia will not permit herself to be left behind in the race for knowledge. Up till now, biology has as a rule never [? not usually] been taught except as a compulsory part of the medical profession, and the time required for the study of the specialities of that profession precludes the possibility of acquiring more than elementary knowledge of general biology, yet it is from the ranks of the medical profession that the most eminent biologists of the day have been drawn. Those branches of science which treat of the forces of nature, and the changes brought about by combination, viz., natural philosophy and chemistry, lead to so many profitable occupations and employments that there is little risk of their being neglected; but it is not so, at present at all events, with the science of natural history. I do not admit that the value of knowledge should be tested by the amount of money it will put into the pockets of its possessor, or that the acquisition of wealth is the sole aim and intention of education, but there can be no doubt that to the mass of people the consideration ‘what will it lead to’ must take a prominent place in the training of youth. Is, then, a knowledge of natural science financially worthless? Does the degree of B.Sc., which necessitates a knowledge of both ancient and modern languages and of all the sciences, not involve a higher and more general culture than that of B.A., which has a recognised value for teachers, clergymen, and barristers? Will not a like, if not a higher value, be placed on the science degree, when its superiority is ascertained and admitted? The time, I am sure, is not far distant when the graduate in science will be eagerly sought, not only for

the education of youth, but for the many and important offices under Government, in which scientific attainments are desirable, as in the departments connected with agriculture, pastoral pursuits, fisheries, woods and forests, horticulture, mining, metallurgy, geological surveys, &c. . . . But reform in our system of education must begin with our schools, and to reform them is by no means an easy task."

With regard to the pecuniary value of the Fellowships, as compared with that of Research Fellowships available for investigators in other parts of the world, I am unable to say very much, as the necessary data have not been available. But, remembering that Sir William had practically settled the essential details of his benefaction so long ago as the year 1882, the following statement is not devoid of interest. In the year 1881, the Owens College, Manchester, was able for the first time to offer five Fellowships, each of the value of £100, to be awarded, not on the results of examination, but after consideration of documentary or other evidence, and with the prospect of a re-appointment for a second, and in like manner for a third year, the successful candidates being expected to devote their time to the prosecution of some special study, &c. Now, the point to which attention may be called is, that in the announcement of the results of the first award of these Fellowships in *Nature* (October 27, 1881, p. 605) it is stated that "These are remarkable as being the only fellowships given in any University or College in the United Kingdom solely for the encouragement of research." No doubt since then there has been considerable development in this direction in Great Britain or elsewhere in Europe, and America; but I am unable to give you details. One thing, however, is certain, the pecuniary value of the Linnean Macleay Fellowships will be very considerable, even perhaps exceptionally high—a consideration which will be not without its responsibility for all concerned. But this responsibility, after all, will take care of itself, if Fellows accept their Fellowships in the right spirit, and for what they are intended to be—"aids to

do work; not rewards for such work as it lies within the reach of an ordinary, or even an extraordinary, young man to do."

If Sir William Macleay's endowment of research were a matter which concerned this Society, the University, and men of science only, there would not be much need to enlarge upon its significance and importance. But Sir William Macleay's prolific benefaction is something which concerns a very much larger social aggregate than the members of this Society and of the University only. In reality it is a most munificent gift to this Society upon trust for New South Wales. But even this statement does not fully meet the case; because, though the Fellows must be New South Welshmen, in the sense that they must have graduated in science at the University of Sydney, and that as Fellows they must be domiciled in New South Wales, the results of their work are to be added to the common stock for the benefit of humanity at large. Therefore, I think I am not mistaken in my views when I venture to say that it seems to be the duty of the Society, as the administrator of the trust declared by Sir William, to consider what can be done to arouse some intelligent public appreciation of the heritage which his munificence has provided; and at the same time to shed light upon what perhaps to those outside the ranks of the strictly scientific is not, at first sight, quite evident—its inner or hidden meaning.

The term research, in its widest sense, has been defined "as indicating those efforts of the human mind which result in the extension of knowledge, whether such efforts are exerted in the sphere of literature, of science, or of art." The entire field is so vast, that the individual who desires to encourage research must keep his plans within the limit of his resources. Sir William Macleay was a naturalist, and therefore his provision for the growth of knowledge took the form of the encouragement of scientific research in those branches in which he himself was specially interested and for whose promotion this Society was instituted.

In Australia, under present conditions, research mainly devolves upon University teachers, the officers of Museums and of

various Government Departments, and amateurs; and therefore, as a rule, in conjunction with, or in subordination to, official duties. The only important exception, as far as I know, is the Macleay Bacteriologist to this Society. But there is another class of investigators, at present only casually or intermittently or not at all provided for, in the above classification; and it was for this special class that Sir William accepted the responsibility of providing an improved *locus standi*. Leaving the Macleay Bacteriologist out of account, Sir William Macleay's liberality is then correctly characterised as the endowment of Post-graduate Research in Natural Science.

The case for the endowment of research of this special character has been well stated by Mr. Addison Brown in an excellent Address upon "Endowment for Scientific Research, &c.," delivered in New York in 1892.* He says:—

"Upon the post-graduate workers, the future of science and the recruits for future teachers and professors, must necessarily depend. In that view the importance of post-graduate endowments in science can scarcely be magnified. The great majority of the young men from whom all the new recruits must be drawn have little or no pecuniary means. After graduating, often through many difficulties, they must face the question of their future calling. They must consider what promise of a reasonable and comfortable support a life devoted to science affords. If this risk should not deter them, still there are many with talents of a high order who would be absolutely unable to proceed further in the advanced scientific studies necessary to qualify them to enter upon remunerative scientific work, or to obtain situations as professors or assistants, except by the aid of substantial endowments for their support, during the three or four years more of necessary assiduous study.

"In the stress of modern life, and in the allurements towards more certain pecuniary results, nothing but such endowments

* Reprinted in the Annual Report of the Smithsonian Institution for 1892, p. 629.

can avert the withdrawal from scientific pursuits of many young men of high promise, whose genius and tastes and ambition strongly incline them to science, and who would be secured to it if this temporary support were afforded."

At the University of Sydney, at the present time, "besides this [the Dalton Fund], the James King of Irrawang Scholarship of £130 per annum, and the Frazer Scholarship for History are the only scholarships for post-graduate work in the gift of the University. The Royal Commissioners of the Exhibition of 1851, at Kensington, have, however, on six occasions awarded Science Research Scholarships of £150, tenable for two years, to graduates in science."* The Dalton Fund now provides for the Woolley Scholarship of £150 per annum, tenable for not more than two years, and is intended to encourage post-graduate study of one or more subjects falling under the heads of Language, Literature, History and Philosophy. The James King of Irrawang Travelling Scholarship is of the annual value of £130, is tenable for not more than two years, and is intended to foster post-graduate study in Mathematics, Chemistry, Physics, or Natural History. The Frazer Scholarship is of the value of £70, and in part is awarded for historical study or research during at least one year after graduation. The Science Scholarship of H.M. Commissioners for the Exhibition of 1851 is of the value of £150, is tenable for two years, and is awarded for "the prosecution of study and research in some branch of Science with a view of developing the manufactures and industries of his [the scholar's] country." (See Note, p. 31.)

The interests of Natural Science in relation to post-graduate study certainly cannot be said to have been lavishly provided for in New South Wales, up to the present.

Reverting to the subject of the endowment of research, it is to be noted that we have no record of any very explicit expositions of Sir William Macleay's views upon such questions as the importance of research work, or the best way of improving its prospects

* Barff, "Short Historical Account," &c., p. 94

in this part of the world. But his actions leave us in no doubt as to what his ideas about these matters were.

Sir William Macleay was a man characterised by remarkable foresight, by unwavering energy, by broad views and strong convictions. Above all things he was a man of deeds rather than a talker; and he put the mark of his personality on all his important scientific enterprises. He had identified himself closely with the cause of higher education. He knew that the pursuit of knowledge without regard to obvious, immediate, or necessary results is not an income-producing profession; and that, except in a few exceptional cases, such work must ultimately depend for its support either upon the State or upon private munificence. He knew, also, that it did not matter from which of these sources the support came, provided it was adequate, reliable and permanent in character. His knowledge of Australian matters was the harvest of half a century's experience. As a politician, he knew much about the claims upon the State in a young and developing country, and the limitations of its powers. Nevertheless he was silent upon the matters referred to. But one thing he did not fail to do. He would seem to have put the case of Australia's need of more workers forcibly to himself, and to have done it in a convincing manner. And then, once more we discern the man of action. For by his deeds, though not in so many words, Sir William has said something to this effect—"I recognise Australia's need for a greater advancement in science. I estimate that, to New South Wales, the capitalised money value of a capable Bacteriologist and four able and qualified Research Fellows, engaged in active work, untrammelled by routine, is not less than £47,000 sterling. After my death, and when certain necessary arrangements which I have made shall have been fulfilled, let the men be found and set to work, and the endowment shall be a charge upon my estate."

In this way Sir William Macleay has provided for a new and perennial source and spring of knowledge; and he has placed its care and maintenance in the charge of this Society.

At the Meeting of the American Association for the Advancement of Science in 1891, the President, Professor Prescott, spoke these remarkable words :—

“There is no greater need in this land—unless it be the exclusive need of righteousness itself—than the need of advancement in science. Let this be understood by all, if America is not to fall short in the nurture of manhood, in the reach of mind and in the arts of peace, if she is not to fall short altogether, she must advance in science, and must cherish her workers in scientific research.”

Is such a statement of the case one whit less applicable to Australia than to America or to any other country?

Then it is not too much to say that by no one in Australia has this need been realised more fully than by Sir William Macleay; for his actions were but the corollary to his beliefs. Looked at separately and from without, his various important scientific undertakings—the development of the Macleay Museum, the development and endowment of the Linnean Society of New South Wales, the endowment of Bacteriological research, and the endowment of Fellowships—may seem to the uninitiated to be merely so many unconnected enterprises. But when viewed from within, they are seen to dovetail into one another, and yet all to hinge on to a central idea, which is their *raison d'être*—the advancement of science.

SOME AMERICAN OBJECT LESSONS.

During my recent visit to the United States, Canada and Europe, I made it my endeavour, as far as possible, to look into several matters which are of special interest to me. And here I should like to express my heartiest appreciation of the courtesy and kindness everywhere extended to me, by perfect strangers, no matter how high their official positions. On the present occasion I shall confine myself to the consideration of two or three American topics which I think will not be devoid of interest to you. At the same time I would point out that it is not the impressions

of what I saw that I wish to emphasise so much as the suggestive facts that lie behind them.

First, then, I will take America's successful exploitation of exotic vegetable products, and for the sake of simplicity, I will confine myself to the consideration of some Australian vegetable products—and notably Eucalypts, Tan-bark Wattles, and Salt-bushes. Just at this point it will be becoming to remind you of the late Baron von Mueller's share in these and other extra-Australian developments on similar lines. His zeal in distributing seeds and in disseminating information has borne fruit abundantly abroad, though the results of his efforts nearer home, perhaps, may not have been so satisfactory.

Among my very pleasant American experiences was a visit to the University of California at Berkeley, and among the first objects to arrest my attention on entering the University ground were some Eucalypts and Saltbushes. The University includes within its scope an Agricultural Department in charge of Professor Hilgard. This Department comprises a Central Experiment Station, with some half-dozen affiliated substations in different localities. I would draw particular attention to one of these—the Santa Monica Forestry Substation. It was established in 1887-8 by the State Board of Forestry, and in 1893 it was taken over by the University from the State. At the latter date there were established here representatives of forty-four species of Eucalyptus, as far as the botanists could determine them, many of them represented by only one or two specimens. In 1903 the number had risen to "something more" than one hundred species, many of them with fifty or more representatives, of different ages, and growing upon different soils. In order that you may appreciate this remarkable fact, I may remind you that, out of a total of about 150 Australian and Tasmanian species of Eucalyptus, Queensland may be credited with about 61 indigenous species, New South Wales and West Australia (Extra-Tropical) with from 50-60 each, Victoria and South Australia (Extra-Tropical) with from 30-40 each, and Tasmania with about 17. The Mallees, or shrubby forms of Eucalyptus, are of less value from

an American point of view than those which are forest trees, and are probably neglected. But here, in this one locality, you have flourishing a choice selection amounting to something between 50 and 75 per cent. of the known species of Australian and Tasmanian Eucalypts. Why, such a sight as this, I believe, cannot as yet be seen in Australia itself.

These Eucalypts are grown for a purpose, and not as curiosities. Their life-histories in detail are known; their behaviour under varying conditions of climate and soil, their rates of growth in height and girth, the flowering periods, and everything else about them of interest are regularly noted, tabulated, and recorded, and the results are from time to time published with most artistic illustrations from life; and the knowledge so gained is diffused broadcast for the benefit of everybody who can make use of it—"The Station Reports and Bulletins will be sent to any citizen of the State on application, so long as available," is the official announcement about them. Seeds and plants are also freely distributed.

Two other points of interest may be mentioned. With such a large number of species under observation, it is found that quite a number of them are in flower all the year round. Results of this kind are recorded and tabulated; and then made available for bee-keepers. Another advantage presents itself, too, in the shape of opportunities for systematic hybridisation, with results that promise to be of great interest and value.

California is very suitable for the acclimatisation of Eucalypts, and the Eucalyptus industry has already grown to such an extent that Professor McClatchie says—"Over much of the State of California Eucalypts are the principal wind-breaks, shade and fuel trees, and the number of useful purposes they serve is continually increasing. Without the Eucalypts, California would be a very different State, and their value to the Commonwealth is beyond calculation."

But Eucalyptus culture is not by any means confined to California. The value of Eucalypts is fully recognised, and their cultivation steadily spreading wherever climatic conditions will

allow. They "are now grown in America, especially in South-western United States, more extensively than any other exotic forest tree," says Prof. McClatchie.

Of the strides which Eucalyptus-culture has made and is making, and of its rapid rate of growth, you will be able to judge almost at a glance by comparing two books on the table before you—one the pioneering work, in a literary sense, of Ellwood Cooper entitled "Forest Culture and Eucalyptus Trees," published in 1876; the other the elaborate and most attractively illustrated work of Professor A. J. McClatchie, entitled "Eucalypts cultivated in the United States," published in 1902, by the U.S. Department of Agriculture.

Much the same sort of story can be told about American enterprise in regard to Acacias and Saltbushes. For the sake of brevity I shall content myself with mentioning the verdict of the late Prof. Myers, Director of the West Virginia Experimental Station, who said—"I have no connection with the University of California, but I have been greatly interested in their experiments with Australian Saltbush (*Atriplex semibaccata*). The work of the California Experiment Station in introducing and developing this plant for the use of the farmers of California is worth more to the State than the entire Experiment Station has cost since its beginning, or will cost for the next fifty years."

Such developments as I have very imperfectly and briefly indicated—the enterprise, the patience, the foresight, the strictly scientific basis of work, the keen appreciation of the value of knowledge—surely all this may be fairly commended to the notice of Australia as an object lesson. If Americans value so highly and treat so handsomely certain Australian plants which they have acclimatised only by a great expenditure of trouble, time and money; how, one may ask, do *we* value Nature's freely given resources, and what sort of treatment do we mete out to them? This only will I say. If as a community we, and our rulers, had a truer insight into the importance of knowledge, and a keener appreciation of its value, how differently some things would be done, or would have been done, in New South Wales and I might even say in Australia.

One of my most delightful American experiences was a visit to the "Children's Room" in the Smithsonian Institution. The story of this notable departure in museum organisation, wholly in the interests of the little ones, has been charmingly told by Mr. Albert B. Paine, in an article contributed to the *St. Nicholas Magazine* for September, 1901, subsequently reprinted, with most beautiful illustrations, in the *Annual Report of the Smithsonian Institution for 1901*. The idea of the Children's Room originated in the fertile brain of Dr. S. P. Langley, the distinguished Secretary of the Smithsonian Institution; who accordingly officially appointed himself Honorary Curator, with explicit instructions "to see that a room was reserved and properly prepared for little children who wished only to look and wonder, and find out such things as little people most want to know." In carrying out his self-imposed task, Professor Langley had, on the one hand, the approval and support of the Board of Regents of the Institution; and, on the other, the loyal and enthusiastic co-operation of his colleagues; and, withal, the resources of the Smithsonian Institution and of the affiliated U.S. National Museum to draw upon. Special attention was devoted to the painting and decoration of the room, to the planning and arrangement of the show-cases, and also to the labelling of the contents. The specimens exhibited are, above all things, choice rather than numerous. "Each object is chosen just to give the child pleasure. If the child receives instruction, too, well and good; but first of all he must be attracted and pleased, and made to wonder, for in wonder lie the beginnings of knowledge." The Children's Room was opened to the public in 1901, and has fully justified its originator's expectations as to its appreciation by those for whose entertainment and pleasure it has been specially provided. As time goes on no doubt it will be still further developed, so as to fulfil yet more perfectly the aim and object for which it was instituted. "The subjects represented are mainly zoological; familiar American birds, common European birds, large birds of prey, interesting water-birds, curious birds, brilliantly coloured birds, illustrations of protective mimicry among birds

and insects, and curious shells, corals, sponges, &c. There are also some minerals, fossils, two aquaria with living fishes, and a number of bird pictures on the walls." Here, in the capital of the great Republic, even young children are coaxed by pleasant ways to become acquainted with the bypaths of Science.

But the "Children's Room" is, after all, only a natural outcome of advanced American ideas upon the subject of the evolution of the purely educational side of Museums. In such institutions, for example, as the United States National Museum at Washington, the Field Columbian Museum at Chicago, and the American Museum at New York, while the other functions of a museum are in no way neglected, special attention is paid to the subject of directly interesting and instructing the general public. Among the methods made use of in the attempt to achieve this object, may be mentioned careful selection of the objects exhibited, improved methods of mounting and displaying in an artistic and realistic manner both individual specimens and groups of individuals, and also a more intelligent and intelligible mode of labelling the specimens. Some of the ethnological grouped exhibits in the U.S. National Museum are especially worthy of notice. In these, the introduction of lay figures for the purpose of illustrating the family life, the exercise of crafts, the ceremonial or other aspects of the tribal life of the American Indians, has been used with admirable results. A very good idea of the success already attained in the directions indicated above may be gained by referring to the illustrations in recent Annual Reports of the three Institutions mentioned. Of the method of visual instruction in connection with the American Museum of Natural History in New York, I shall have occasion to speak elsewhere.

Just one other phase of American museum development may be noticed, namely, the zeal displayed in the acquisition of new material, not merely in the ordinary way by purchase or by exchange, but especially as the result of work done in the field by individual collectors or of collecting expeditions, sent out for the purpose. Such collectors or collecting expeditions not only

visit out-of-the-way localities in the United States, but also other parts of the world such as Peru, China, Egypt, Siberia, and so on.

Such, in brief review, are some of the ways in which American enterprise manifests itself in connection with the expansion and development of public Museums. To what extent it is primarily attributable to the appreciation of knowledge for knowledge' sake, which characterises the Americans, I am not prepared to say. But, however that may be, the developments I have outlined are matters which one would like to see claiming an equal amount of attention in Australia, and especially in New South Wales, the mother State of the Commonwealth. The only real obstacle in the path of progress is the old familiar one of lack of resources. In the last Annual Report of the Australian Museum, the Trustees again found occasion to urge upon the Government the inadequacy of their resources for maintaining its efficiency and for developing the collections. Everywhere in Australasia and Polynesia land-faunas are becoming more and more disturbed, rare species are becoming rarer, and aboriginal peoples are becoming more and more sophisticated or are vanishing. And in the meantime our own Museum too often is unable to obtain a share of the material available, partly because of the competition of the better subsidised National, State or private Museums of Europe and America. Nevertheless, experience plainly shows that opportunities once lost are often lost for ever; and that for Museums to stand still under such circumstances really means they are falling behind, while others win the place of honour which they should have occupied themselves.

Undoubtedly such brilliant results as are seen in museum development in the United States could hardly have been achieved unless aid had been offered by the princely and unselfish munificence, not of a few, but of many well known citizens of the Republic. In short, in order that our Institutions may hold their own it is absolutely necessary that they receive the sympathy and generous financial support of Australians similarly endowed with the good things of this world. Needless to remark that we

have had a few brilliant instances of generous endowment of Science. More are needed.

Other interesting experiences were my visits to the Leland Stanford Junior University, and to the University of California. These Western, as well as some other American, Universities have introduced some innovations which seem to be worth consideration. The following is an extract from the Regulations in force at the Leland Stanford Junior University:—

“Every student upon entering the University is required to report to the assistant professor of hygiene for a brief medical examination of his eyesight and general health. Any condition which may place a limitation on the amount or kind of work planned by the student is discussed with him, or made the subject of a report to his major professor, or to the Committee on Registration.

“Students intending to train for any of the athletic teams, or to register for gymnasium work, are required to pass a careful physical and medical examination at the beginning of each semester.

“All students are entitled to medical consultation, and to individual advice in other matters directly or indirectly relating to their health, at any time during the year; but no treatment is undertaken by the University.”

Similar regulations are in force at the University of California. The parental care over the health and welfare of students officially exercised in accordance with these regulations, seems to me to be a very admirable movement, and one which is calculated to justify large expectations that a recognisable outcome of it will be a distinct improvement in the mental work of students.

In conclusion, it affords me pleasure to say that in the endeavour to put before you some matters of history which fittingly command attention on the present occasion, I have gladly availed myself of the co-operation of the Secretary, to whom everything relating to the history and welfare of the Society, and to Sir

William Macleay in any capacity in which we are entitled to speak of him publicly, is, as we all know, of the deepest interest.

In the unavoidable absence of the Hon. Treasurer, the Secretary, on his behalf, presented the balance sheet for the year 1903; and on the motion of Mr. C. Hedley it was received and adopted. The Society's income for the year ended December 31st, 1903, was £1,008 9s. 6d; the expenditure £1,075 3s. 1d.; with a credit balance of £43 13s. 7d. from the previous year, leaving a debit balance of £23. The income of the Bacteriological Department was £554; and the expenditure £533 9s. 6d.; with a credit balance of £194 2s. 5d. from the previous year, leaving a credit balance of £214 12s. 11d. In regard to the Macleay Fellowships Account (Capital), the sum of £33,250 had been received from Sir William Macleay's executors, and invested at 4 per cent.

No nominations of other Candidates having been received, the President declared the following elections for the current Session to have been duly made :—

PRESIDENT: T. Storie Dixon, M.B., Ch.M.

MEMBERS OF COUNCIL (to fill five vacancies): Messrs. W. S. Dun, Prof. W. A. Haswell, D.Sc., F.R.S., Hon. James Norton, LL.D., M.L.C., Perceval R. Pedley, Edgar R. Waite, F.L.S.

AUDITORS: Messrs. Duncan Carson and Edward G. W. Palmer, J.P.

On the motion of Mr. A. H. Lucas, a cordial vote of thanks was accorded to the President for his interesting Address.

ADDENDA.

Page 11, line 20, *for* in the original Charter of 1858, *read* in the Act of Incorporation of 1850, and the Royal Charter of 1858.

Page 21, line 28, *add* The Caird Scholarship of £50 for the encouragement of the study of Chemistry, tenable for one year, is available for post-graduate research work provided there is "no available Candidate at the Second Year Examination."